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09/833,017	04/10/2001	Dennis Cvitkovitch	1889-00401	8365

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EXAMINER
BASKAR, PADMAVATHI

ART UNIT	PAPER NUMBER
1645	24

DATE MAILED: 07/16/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/833,017	Applicant(s) CVITKOVITCH ET AL.	
	Examin r Padmavathi v Baskar	Art Unit 1645	

-- The MAILING DATE of this communication appears on th cover sheet with the correspond nce address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *17 April 2003* .

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *22-31 and 38-44* is/are pending in the application.

4a) Of the above claim(s) *29-31 and 42* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *22-28 and 38-41 and 43-44* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

R spons to Amendm nt

1. The amendment filed on 4/17/03 has been entered into the record. Claims 1-21 and 32-37 have been canceled. Claims 29-31 are withdrawn from consideration, said claims drawn to a non-elected invention. New claims 38-44 have been added. However, claim 42 is withdrawn from consideration as it recites a new SEQ.ID.NO: 16, which was not elected and examined or searched in the prosecution Therefore, claims 22-28 and 38-41 and 43-44 are under examination. 29-31 22-31and 38-44 are pending in the application. Claims 22-28, 38-41 and 43-44 are under examination.

2. The examiner acknowledges the priority documents, corrected drawings and amendments to the specification.

Rejections are moot

3. In view of cancellation of claims 1-5 and 32-37, the rejections under 35 U.S.C. 112 first paragraphs are moot.

4. In view of cancellation of claims 1-5 and 32, the rejection under 35 U.S.C. 112 second paragraph is moot

5. In view of cancellation of claims 1-5 and 32, the rejection under 35 U.S.C. 102(b) as being anticipated by Taubman et al 1979(U.S.Patent 4,150,116) is moot.

6. In view of cancellation of claims 1-2 and 32, the rejection under 35 U.S.C. 102(b) as being anticipated by Gristina et al 1996 (U.S.Patent 5,530,102) is moot

7. In view of cancellation of claims 1-2 and 32, the rejection under 35 U.S.C. 102(b) as being anticipated by Lehner et al 2000 (U.S.Patent 5,530,102) is moot.

8. In view of cancellation of claims 1-5 and 32-33, the rejection under 35 U.S.C. 102(b) as being anticipated by Russell 1985 ((U.S.Patent 4,521,513) is moot.

R jecti ns Maintained

9. The rejection of claims 22-28 and newly added claims 38-41 and 43-44 under 35 U.S.C. 102(b) as being anticipated by Russel 1985 ((U.S.Patent 4,521,513) is maintained as set forth in the previous office action.

Claims are directed to an isolated polypeptide or a fragment thereof having S.mutans competence signal peptide activity comprising all or part of an amino acid sequence SEQ.ID.NO: 2 or 4.

Russel discloses an isolated antigenic protein C, present in the cell walls of S.mutans which reads on the isolated polypeptide having S.mutans competence signal peptide activity comprising all or part of an amino acid sequence SEQ.ID.NO: 2 or 4. The disclosed protein inhibits the binding of CSP to S.mutans histidine because the protein (i.e., antigen or competent signal peptide) is from competent bacteria S.mutans, Inbritt strain and is used to prevent dental caries from bacteria S.mutans (see column 4, lines12- 46). Further, the prior art discloses monkeys were protected from caries (see figure2 and column 7, lines 23-32) indicating that it has competence signal peptide activity and thus prevents dental caries. Thus the antigenic protein C reads on an isolated polypeptide having S.mutans activity. Therefore, isolated protein from S.mutans of Russel inherently comprises the claimed polypeptide since the antigen is prepared from widely known competent Inbritt strain. The recombinantly produced polypeptide, claim 26 is viewed as product by process claim read on the disclosed polypeptide since the disclosed antigen does have the same activity. Although product-by-process claims are limited and defined by the process, nonetheless, determination of patentability is based on the product itself. The patentability of a product does not depend upon its method of production. If the product in the product-by-process claim is the same as or an obvious variant of the product of the prior art, the claim is unpatentable even though the product was made by a different process. The recitation of a process limitation in claim 26 is not seen as further limiting the claimed product, as it is presumed the equivalent products can be obtained by multiple routes. Where a product-by-process claim is rejected over a prior art product that appears to be identical, although produced by a different process, the burden is upon the applicants to provide evidence establishing an unobvious difference between the claimed product and the prior art product. *In re Thorpe*, 227 U.S.P.Q. 964, 966 (Fed. Cir. 1985). *In re Marosi*, 218 U.S.P.Q. 289, 293-293 (C.A.F.C. 1983). *In re Best*, 195 U.S.P.Q. 430, 433 (C.C.P.A. 1977). *In re Brown*, 173 U.S.P.Q. 685, 688 (C.C.P.A. 1972).

The disclosed prior art antigenic protein C comprises the amino acid sequences of SEQ.ID.NO 2 or 4. Characteristics such as amino acid sequence would be inherent in the preparations of Russel. Examiner is viewing the claims as having open claim language (i.e., comprising) Applicant's use of the open-ended term "comprising " in claims fails to include unrecited steps or ingredients and leaves the claims open for inclusion of unspecified ingredients, even in major amounts). See *In re Horvitz, 168 F 2d 522, 78 U.S.P.Q. 79 (C.C.P.A. 1948) and Ex parte Davis et al., 80 U.S.P.Q. 448* (PTO d. App. 1948). *In the absence of*

evidence to the contrary the disclosed prior art composition and the claimed composition are the same. Since the Office does not have the facilities for examining and comparing applicants' claimed polypeptide with the polypeptide of the prior art, the burden is on applicant to show a novel or unobvious difference between the claimed polypeptide and the polypeptide of the prior art. In re Thorpe, 227 U.S.P.Q. 964, 966 (Fed. Cir. 1985). In re Marosi, 218 U.S.P.Q. 289, 293-293 (C.A.F.C. 1983). In re Best, 195 U.S.P.Q. 430, 433 (C.C.P.A. 1977). In re Brown, 173 U.S.P.Q. 685, 688 (C.C.P.A. 1972).

Applicants' arguments filed on 4/17/03, have been fully considered but they are not deemed to be persuasive.

Applicant states that the antigen described by Russel et al is unlikely to interfere with the interaction of CSP with histidine kinase. Further, Applicant asserts that the protein described by Russel is isolated from the cell walls of S.mutans and has a molecular weight of 70,000+/- 5000 Da, iso-electrical point 4.45 +/- 0.24.

It is the position of the examiner that the applicant has not provided any evidence to show that the antigen described by Russel et al is unlikely to interfere with the interaction of CSP with histidine kinase. There is nothing on the record to show that the antigen of Russel does not interfere with the interaction of CSP with histidine kinase. Applicant argues about the limitations " molecular weight and iso-electrical point " which are not set forth in the claims.

Applicant agrees that the antigen disclosed by Russel is naturally competent. However, the growth conditions described by Russel are not competence inducing, therefore, very little CSP should be produced prior to his purification. Again applicant is arguing the limitations which are not set forth in the claims. Therefore, the rejection is maintained.

10. The rejection of claims 22-28 and newly added claims 38-41 and 43-44 under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for an isolated polypeptide consisting of SEQ.ID.NO 2 or 4 does not reasonably provide enablement for any fragments of SEQ.ID.NO 2 or 4 or variant or peptide mimetic or parts of amino acid sequences of SEQ.ID.NO: 2 or 4 or sequences having greater than 30%, 50% or 60% sequence identity. The specification does not enable any person skilled in the art to which it pertains, or with which

it is most nearly connected, to make and use the invention commensurate in scope with these claims.

Applicants have listed fragments of SEQ.ID.NO 2 or 4 or variant or peptide mimetic or parts of amino acid sequences of SEQ.ID.NO: 2 or 4 or sequences having greater than 30%, 50% or 60% sequence identity. It is well known that for proteins, for example, even a single amino acid change can destroy the function of the biomolecule. The effects of these changes are largely unpredictable as to which ones have a significant effect versus not. Further, specification is silent on what changes would have an adverse effect on the function of this peptide. It is known in the art that fragments or variants, which are obtained by substitutions, deletions, or modifications of the isolated polypeptide, alter the function of the protein as claimed. The amino acid sequence of a protein determines its structural and functional properties, predictability of which changes can be tolerated in a protein's amino acid sequence and still retain similar activity requires a knowledge of and guidance with regard to which amino acids in the protein's sequence, if any, are tolerant of modification and which are conserved (i.e. expected intolerant to modification), and detailed knowledge of the ways in which the proteins' structure relates to its function. However, the problem of predicting protein structure from mere sequence data of a single polypeptide and in turn utilizing predicted structural determinations to ascertain functional aspects of the protein and finally what changes can be tolerated with respect thereto is extremely complex (Bowie et al. Science, Vol. 247: 1990; p. 1306; p. 1308) and is well outside the realm of routine experimentation. Applicant failed to show what fragments of SEQ.ID.NO 2 or 4 or variants or peptide mimetic of SEQ.ID.NO 2 or 4 or sequences having greater than 30%, 50% or 60% sequence identity to SEQ.ID.NO: 2 or 4 would be suitable for competence signal peptide activity.

Therefore, polypeptides fragments, variants or mimetic or sequences having greater than 30%, 50% or 60% sequence identity to SEQ.ID.NO: 2 or 4 as claimed result in an unpredictable polypeptide without any function.

Applicants' arguments filed on 4/17/03, have been fully considered but they are not deemed to be persuasive.

Applicant states that the polypeptide fragments, variants and sequence identity are defined by methods known in the art and refers pages 14, 22 and 23 to examiner's attention. The examiner has carefully gone through the specification and finds that the general methods and assays have been described in the specification. However, the specification lacks any evidence to show that the claimed fragments, variants or mimetic of SEQ.IDNO: 2 or 4 would be able to confer genetic competence to S.mutans or confer acid tolerance response in S.mutans as measured by various assays neither have been constructed nor practiced in the present

invention. Therefore, the claims are enabled for an isolated polypeptide consisting of SEQ.ID.NO: 2 or 4.

New Objection based on the Amendment

11. The amendment filed on 4/17/03 is objected to under 35 U.S.C. 132 because it introduces new matter into the disclosure. 35 U.S.C. 132 states that no amendment shall introduce new matter into the disclosure of the invention. The added material which is not supported by the original disclosure is as follows: Recitation of 1-15 amino acids from the N- and/or COOH terminal of SEQ.ID.NO: 2 or 4 have been removed and 1 point mutation per each 10amino acids of SEQ.ID.NO: 2 or 4, or portion thereof are not disclosed either in the specification or in the originally presented claims. Applicant is required to cancel the new matter in the reply to this Office Action.

New Claim Rejections - 35 USC § 112 based on the Amendment

12. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

13. Claims 38-41 and 43-44 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

The added material which is not supported by the original disclosure is as follows: Recitation of 1-15 amino acids from the N-and/or COOH terminal of SEQ.ID.NO: 2 or 4 have been removed

and 1 point mutation per each 10amino acids of SEQ.ID.NO: 2 or 4, or portion thereof are not disclosed either in the specification or in the originally presented claims.

Status of Claims

14. No claims are allowed.

Conclusion

15. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP ' 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for response to this final action is set to expire THREE MONTHS from the date of this action. In the event a first response is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event will the statutory period for response expire later than SIX MONTHS from the date of this final action.

16. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Padma Baskar whose telephone number is (703) 308-8886. The examiner can normally be reached on Monday through Friday from 6:30 AM to 4 PM EST

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lynette Smith, can be reached on (703) 308-3909. The fax phone number for the organization where this application or proceeding is assigned is (703) 308-4242.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-1235.

Padma Baskar Ph.D.

7/10/03

LYNETTE R. F. SMITH
SUPERVISORY PATENT EXAMINER
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